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(54) Manufacturing Identity Cards

(57) A camera 6 simultaneously photographs a person illuminated by flashlamps 47 and an image of a data card reflected by a screen 45 behind the person. The card is located in a chamber 7 and illuminated by flashlamps 8 to project an image via a lens 5 and a semi-reflector 4 onto the screen 45. The system is controlled by logic 20 and incorporating various safety features to prevent faulty operation.

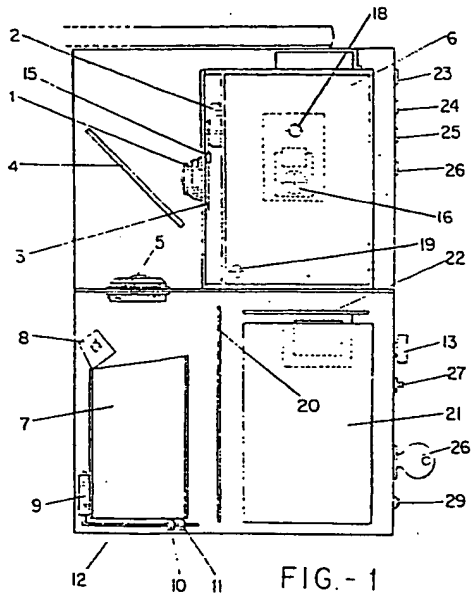

FIG.-1

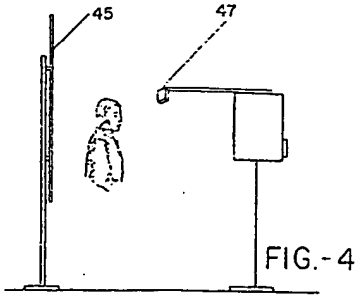

FIG.-4

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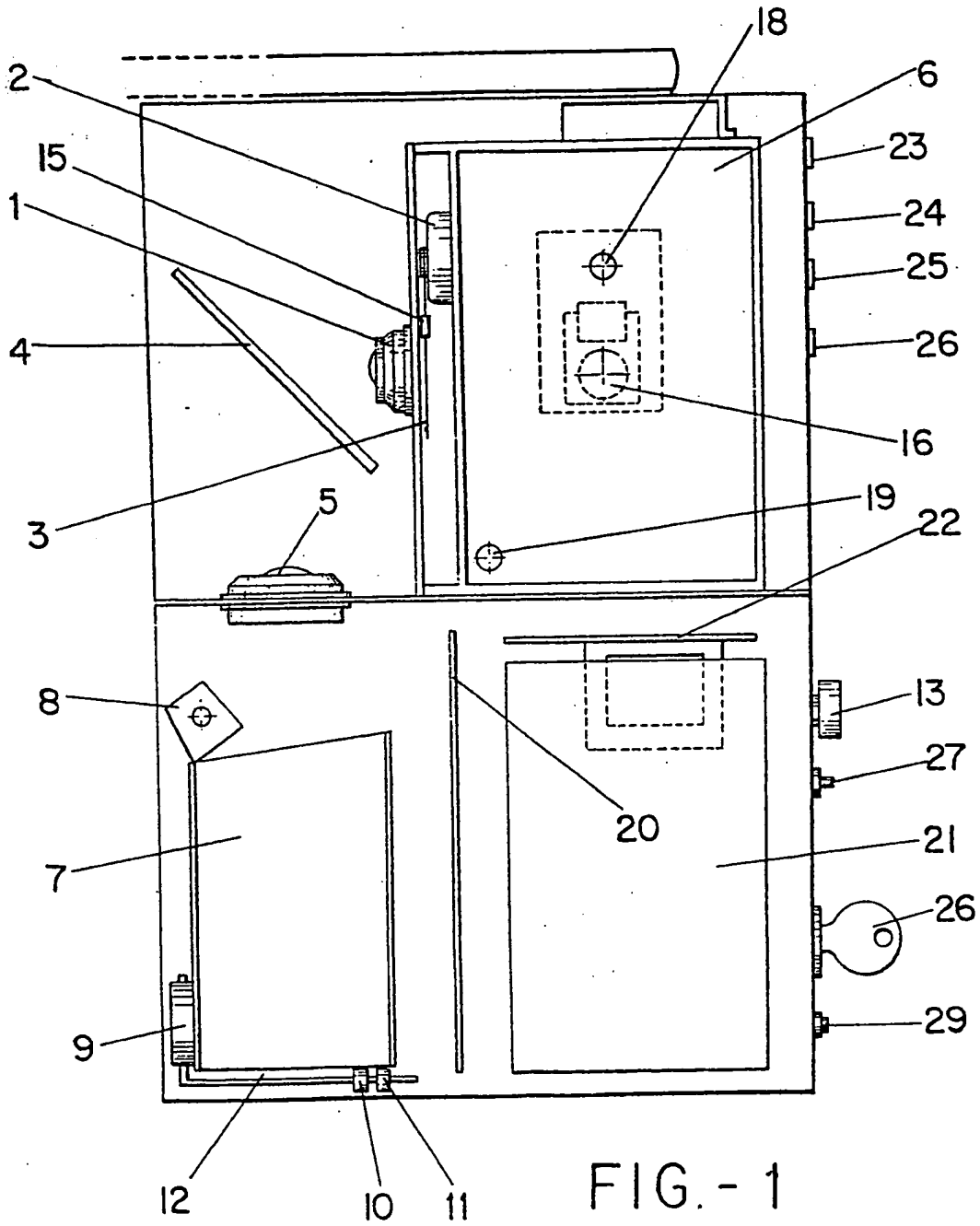

FIG. - 1

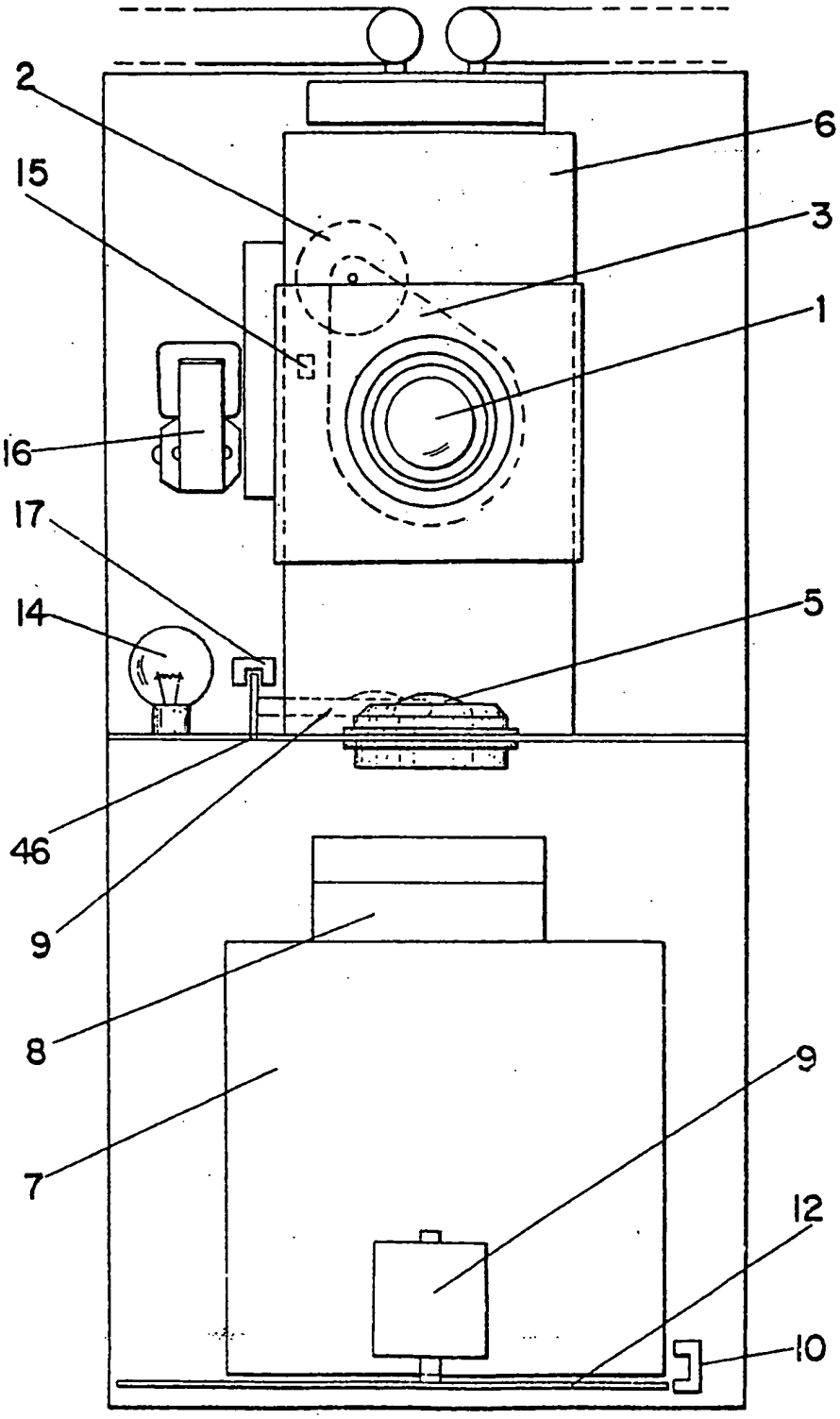

FIG.-2

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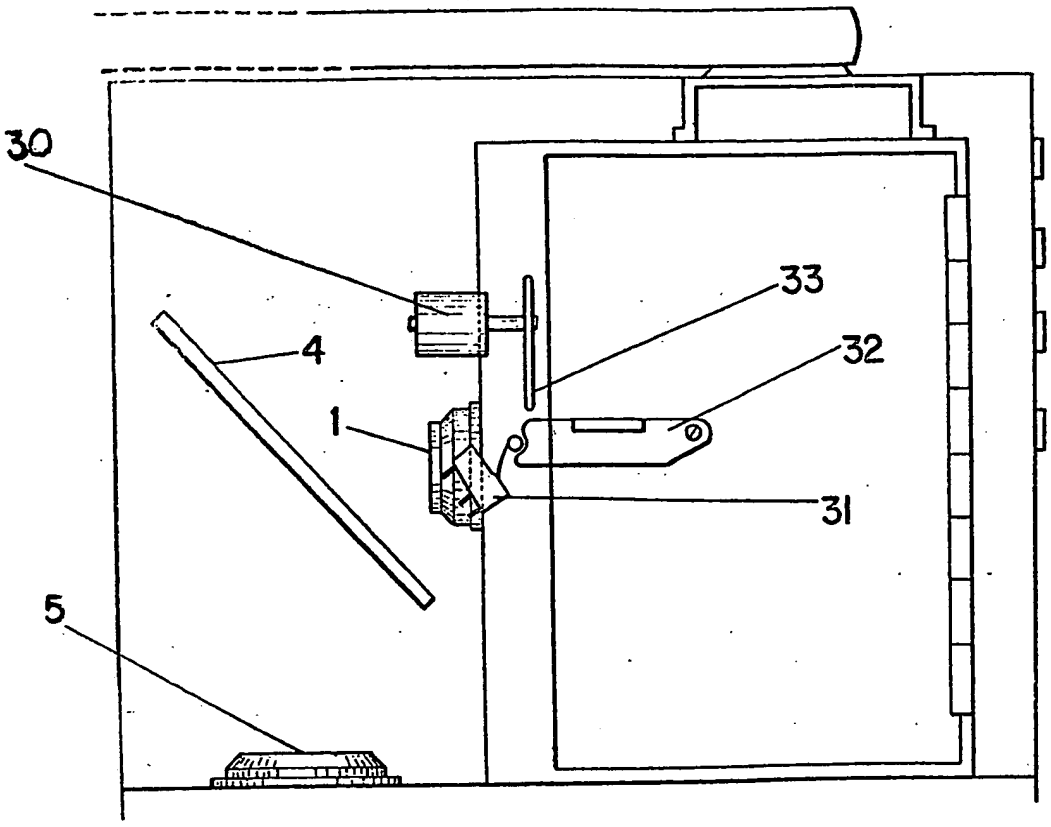

FIG.-3

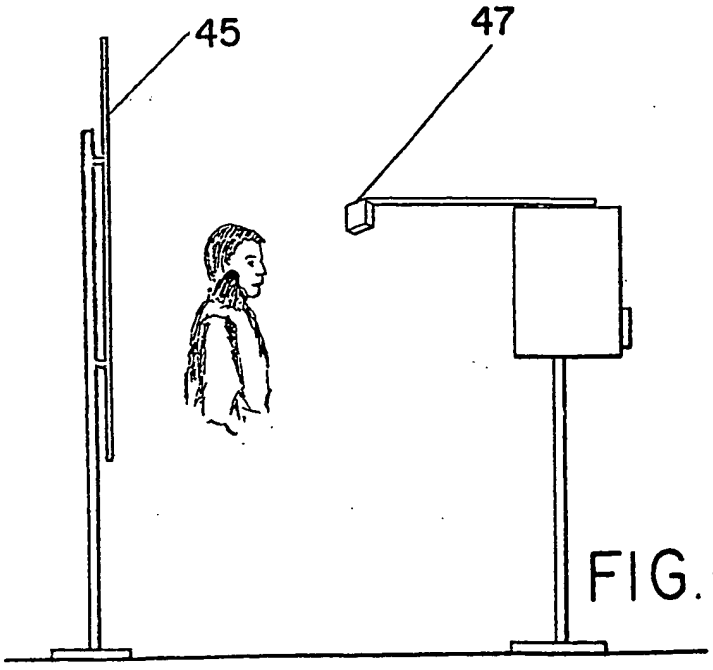

FIG.-4

FIG.-5

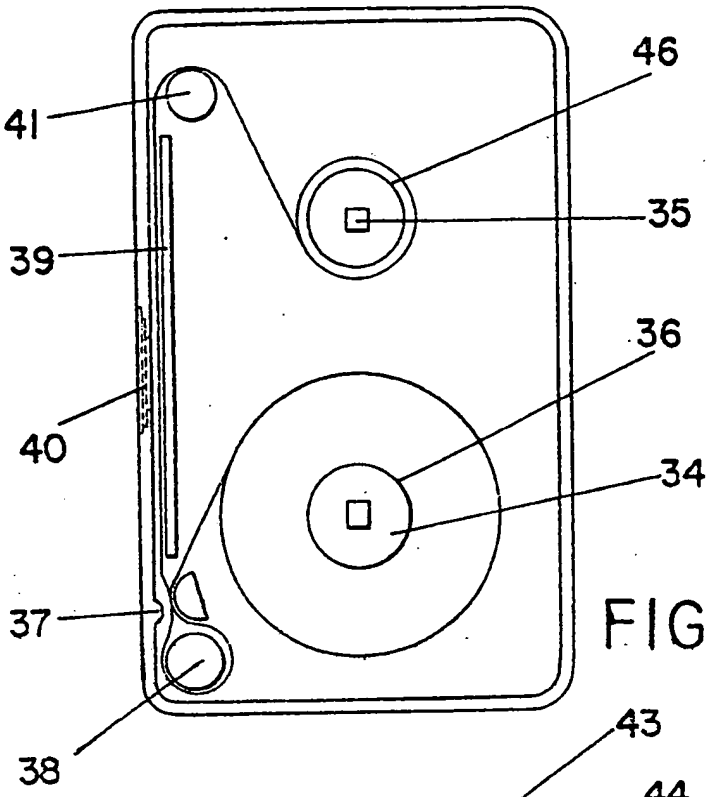

FIG.-6

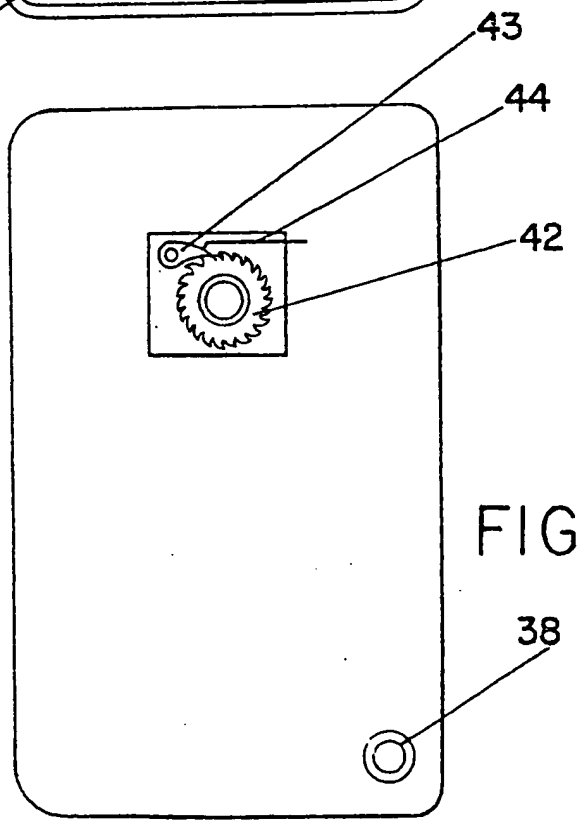

FIG.-7

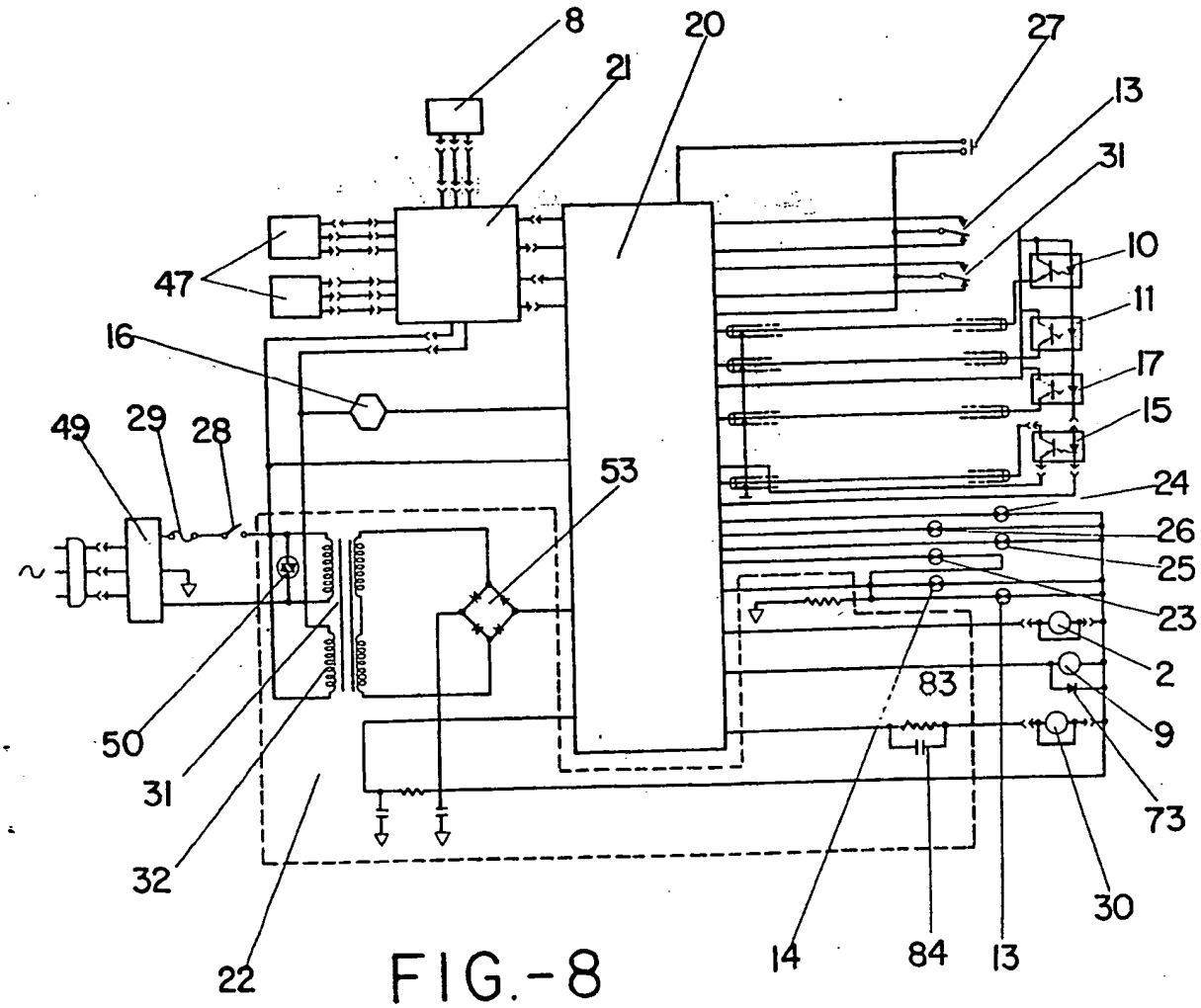
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FIG.-8

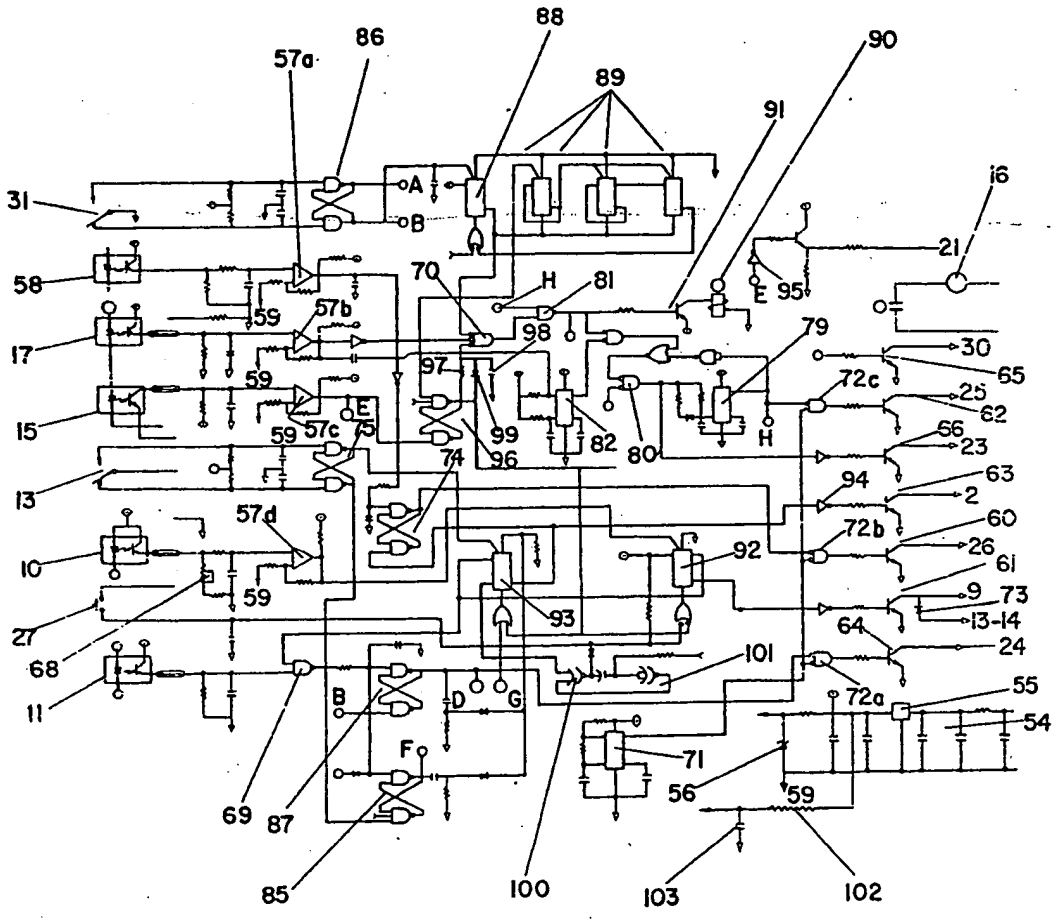
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FIG.-9

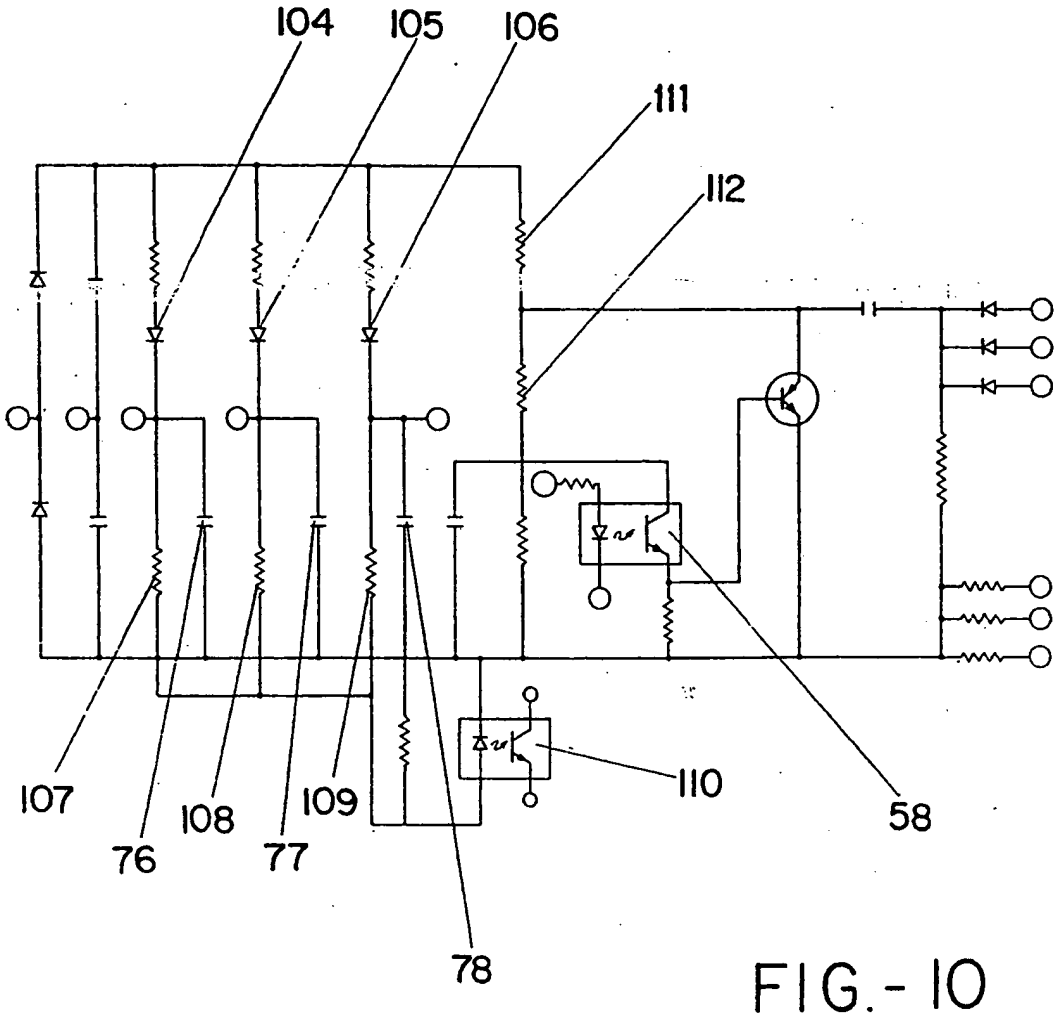

FIG.- 10

SPECIFICATION

Improvements Introduced in Systems for Manufacturing Identity Cards

The present invention refers to improvements introduced in systems for manufacturing identity cards.

The object of the invention resides in a photographic camera, totally automatic and of the type which takes a photograph of an individual together with his identification details, such as his identification document, his fingerprints, and any data considered necessary, thus obtaining a negative which is not provided with the discontinuous lines which would permit said data to be readily forged.

The invention uses the process, known per se, of placing an individual between a retroreflecting screen and a camera to obtain a negative of said individual and his identification data. Thus, based on these systems a manufacturing identity cards, the invention proportions a completely automatic camera controlled by a control logic circuit, whereby all possibility of effecting erroneous recordings of data, loss of information, false focusing, and fogging of the photographic film are prevented, said camera being provided with a plurality of elements and control references which facilitate handling of the assembly and proportion a greater safety in the functioning thereof, an essential characteristic in a photographic machine for manufacturing documents.

The conventional machines of this type, based on the same principle of recording data, are not provided with the automatisms introduced with the improvements of the present invention and frequently produce erroneous recordings, such as those taken at the beginning of each photographic film where the first photograms are previously fogged as a result of the handling of said film. Besides, the conventional machines frequently record with poor illumination due to the failure of one of the illuminating flashes, with the consequent prejudices for the user.

All these problems are overcome with a camera provided with the improvements which will subsequently be described, having the characteristic that at the beginning of a photographic film it is necessary to introduce a control card indicative of the characteristics, origin, or other data of interest of the individual being photographed on said film. When this control card is not present, the machine will not be able to function, visual means indicating the need for introducing said card. Besides, the camera is provided with safety systems which prevent all possible failures, whether of a mechanical or a human nature, the following of which should be emphasized:

a) An automatic circuit breaker which compensates for the possible extraordinary increases in the supply of electrical current of the camera.

b) Two current stabilizers supplying different logic circuits which control the operation of the camera.

c) A key-controlled starting switch, which key can be withdrawn irrespective of the position of the switch, insuring the continuity in functioning of the camera against outer actions.

d) Opto-sensors so arranged that they prevent the data card from being introduced in an erroneous position, a position which will invalidate the photographic reproduction. Likewise, an opto-sensor is provided which reproduced a photograph on a special card or a control card which is used as a means for identifying the film.

e) A latch which prevents the accidental opening of the gate of the compartment of the holder and which could produce fogging of the printed film, said latch being blocked by means of a solenoid controlled by a control logic circuit.

f) A latch directly connected to the control circuit which causes the film to move, in a predetermined number of photograms when the gate of the compartment of the holder in which the film is housed is opened or closed, thus avoiding the use of a fogged portion of film, as well as the invalidation of the final photograms made during the withdrawal operation of the film.

g) A series of flash lights indicating that the control card should be introduced, that the film has finished or that same has been blocked in its holder, and that one of the illuminating flashes has failed.

h) A timing circuit which facilitates functioning of the drag motor for a limited number of seconds with the purpose of avoiding, in case the film has come to an end, the uninterrupted functioning thereof. Likewise, a delay circuit is included which insured a time interval between the reproduction of two consecutive photographs, in order to permit the total loading of the feed condensers of the flashes.

The previously mentioned control logic circuit is the physical means which permits the various automatic functions of the machine as well as of the contemplated control elements. Thus, the automatization obtained is relevant for the drag motor of the photographic film, an action which is controlled by a tachometric disc and an opto-electronic sensor assembly.

This tachometric disc, provided with teeth or perforations, is so housed that it meshes with one of the drag pivots of the film and in such a way that the pitch of each tooth coincides exactly with the distance existing between each photogram including the separation zone thereof.

Since the opto-sensor is coupled to this tachometric disc, each time a photogram passes, this opto-sensor will be excited by the tooth end of the tachometric disc, sending a signal to the logic circuit, which signal is conveniently processed and excites the relay which sets off the drag motor of the camera, causing an unprinted photogram to reach the focus position. The control of the drag motor is completed by an N-pitch counting circuit (N is preferably 4) which is

activated when the film is loaded or when same has terminated, so that under these circumstances the unprinted passage of these N photograms is produced in order to insure the optimum state of the first photogram to be used and the printed conditions of the last photogram used, which could be altered when the film is loaded or withdrawn from the camera.

Another interesting feature of the control logic circuit resides in that it includes an opto-electronic sensor which is set to emit a signal when the luminous intensity emitted by the flashes acquires a determined value. Thus, if any one of the flashes does not function or a flash inferior to that pre-established is produced, causing the consequent failure in the exposure of the photogram, the photograph is unfit and means indicating that a new photograph should be taken is activated.

To prevent the camera from functioning without a film and, therefore, the consequent wear on the motor, there is provided a timing circuit which is activated precisely when the motor of the camera starts to function, causing a period of approximately 7 seconds, after which, with the motor in operation, the activating relay thereof is disconnected, and the motor is immediately stopped. Under normal circumstances, this period of 7 seconds is not usually required, since the motor receives the stopping order through the route corresponding to the tachometric disc and its opto-sensor coupled thereto. However, when the film is broken then the mentioned timing circuit plays its main role.

To complement the description which will subsequently be made and for a better understanding of the characteristics of the invention, a set of drawings is attached hereto wherein the following is represented by way of illustration and not limiting:

Figure 1 corresponds to a profile schematic view of a camera in accordance with the improvements of this invention.

Figure 2 represent a front view of the camera of the preceding figure.

Figure 3 represents a side view of the upper half of the camera, illustrating some of the safety elements incorporated thereto.

Figure 4 illustrates a schematic diagram of an embodiment of use of the system for manufacturing identity cards carried out in accordance with the invention.

Figure 5 illustrates a negative obtained with the process of the invention.

Figure 6 and Figure 7 illustrate profile views of the mechanisms provided in the holder in which the photographic film is housed.

Figure 8 represents the general scheme of the electrical and electronic parts of the camera.

Figure 9 corresponds to the electronic circuit of the logic assembly which controls the operation of the system.

Figure 10 represents the feeding scheme of the flashes and the opto-sensors.

Referring to the aforementioned figures, the improvements introduced in systems for manufacturing identity cards of this invention are based on the use of a photographic camera provided with a main lens 1 which opens into a small dark chamber wherein a toroidal solenoid 2 is housed which, by means of its turn, causes the displacement of a blackish plate, constituting the shutter 3 of the lens 1, said shutter 3, when completely opened, interrupting the optical adjustment relative to the circuit of an opto-sensor 15. In front of the lens 1 there is a semi-mirror 4 arranged according to an inclined plane and therebelow, in perfect quadrature with the lens 1, there is placed a second projection lens 5. Below this lens 5 there is a projecting chamber 7 illuminated by an electronic flash 8, the bottom 12 of which is at focus with the retro-projecting screen 45. Immediately behind the small chamber of the shutter 3, there is a chamber 6 in which the film-holder is housed, said chamber being protected by a gate, not represented in the mentioned figures, through which said holder is introduced and is automatically restrained in two pivots 18 and 19 having a movable key solidly fixed, respectively, to the motor 16 by means of which the photographic film is dragged.

The panel 20 of the logic circuit which controls the various automatic functions of the machine is housed below this chamber 6 and very close to the projecting chamber 7. On the outside and the rear thereof are housed the different controls and the signalling lights of the invention.

The complete system is connected or disconnected by means of a key 28 since same is joined to a general switch. This key can be withdrawn in any of the operative positions thereof, thus preventing handling by third parties. The automatic circuit breakers 29 protect the different electric and electronic circuits from intensity overcharges in the supply of current of the assembly. The main control element of the camera is constituted by the trigger button 13, by means of which the photograph is reproduced, this button being provided with a light indicative of the possibility of reproducing said photographic recording. The reference lamp 24 advises the operator of the need of producing a control card for the functioning of the camera, while the reference lamp 23, when illuminated, indicates the need of a new data card. The reference lamp 25 indicates that the film is finished or that the drag system thereof has failed, while reference lamp 26 indicates the possible failure in the functioning of the illuminating flashes.

The circuit 21 corresponds to the feed supply and to the control system for the flashes, while the panel 22 houses the general feed supply for all the elements, electric and electronic, included in the embodiment of the invention. The chamber 6 in which the film holder is housed consists of a black box made of Bakelite (Registered Trade Mark) or a similar material having the exact dimensions so that a reel of film of 35 mm., and preferably of 30 meters in length, can be housed therein. Unperforated films can be used since the

drag system does not utilise said perforations. Therein there is a pulley 46 solidly fixed to the driving shaft 35 to which the film is fastened, which continues along a roller 41 to be directed towards the chamber situated behind the shutter 3, through a throat constituted by the wall of the chamber provided with an exposure window 40, stepped to prevent reflexes and placed between a sheet of Bakelite (Registered Trade Mark) or a similar material 39 which is supported by a strip, not represented, which permits it a certain flotation. A throat 37 forces the film to almost completely surround the pulley 38 which is preferably coated with rubber and in which the previously mentioned axis 19, the support of the film holder, meshes.

There is a small ratchet 43 supported by a strip 44 which meshes with a toothed wheel 42 solidly fixed to the axis 35 of the holder in which the pivot 18 of the drag motor 16 is fixed, thereby preventing the film from being unwound from its reel. The printed film will be housed in the reel 36 which turns about the axis 34.

The camera is operated as follows: Once the camera is mounted, it is activated by means of the key-operated switch 28 and in case of a shortcircuit or an overcharge in the electric systems of the assembly, the automatic protector 29 will operate preventing the camera from being damaged. Under normal operating conditions, the film holder is introduced into the chamber 6, the gate whereof is closed by the rotary latch 32 which activates a switch 31, which activates the motor 16 causing the film to move forwards. Due to this automatic start-up the fraction of fogged film, since it faces the window 40 of the holder, is erroneously used to take a photograph. The film moves the necessary space so that four photograms may pass, this operation being controlled by the logic circuit 20; the passage of the film drags the axis 19 to which is meshed a tachometric disc provided with perforations and which, in turn, interrupts the optic circuit of the opto-sensor 17, sending a signal which is analized in the logic circuit 20, causing the motor 16 to stop when the mentioned four photograms pass. Immediately this operation takes place, said logic circuit 20 causes the reference lamp 24 to light up intermittently, requesting a control card. A card on which all the information relating to the location and identification of the film will be recorded should be introduced in the projecting chamber 7, in order to prevent errors in the manufacturing process and to facilitate the filing of data. One of the corners of this control card will be cut so as to interrupt only the opto-sensor 10 and not the other opto-sensor 11 placed in the proximities thereof, the purpose of which is to locate the data card. If both opto-sensors 10 and 11 are interrupted, the camera will not operate and will be blocked. However, when the control card is correctly introduced, the camera will produce an automatic trigger which will print the first negative with the data relating to the film.

Once the trigger has been effected, the motor 16 will be operated dragging the film which, in turn, will move the tachometric disc, activating the opto-sensor 17 which advises the logic circuit 20 that the photogram has passed. Under these circumstances, the motor 16 will stop and the lamp 23, which requests a data card, will be illuminated to initiate the identity card photographic process. From this moment onwards, the steps carried out are sequential and one cannot be produced without immediately prior thereto having been produced:

1. Once the data card is introduced, the opto-sensors 10 and 11 will be interrupted. If the introduction is correct, the solenoid 9 will be activated holding the data card, and the light of the trigger button 13 as well as the focussing light 14, arranged parallel to the former, are simultaneously illuminated.

2. When the trigger 13 is depressed, the solenoid 2 of the shutter 3 will open, separating its plate from behind the lens 1, thus interrupting, in the maximum turn of the shutter, the circuit of the opto-sensor 15 housed there.

3. The opto-sensor 15 orders the flash 8 to trigger, which flash illumintes the projecting chamber and the pair of outer flashes 47 which illuminate the subject to be photographed.

4. This trigger, if correct, causes the solenoid 2 to be deactivated and the drag motor 16 to be activated.

5. Since the film is dragged, it causes the wheel 38 joined to the axis 19 to turn in the interior of the holder, which axis, in turn, is solidly fixed to the tachometric disc 48 situated in the opto-sensor 17. When a tooth passes through the opto-sensor, the motor 16 is stopped and the lamp 23, which requests a new data card, is illuminated, the camera being in a position to take a new photograph.

If an error has been committed during the introduction of the data card, a push-button 27 will deactivate the system and will permit the introduction of another new data card, the described sequence of operations being started.

Sealing of the camera, once the photographic cycle has commenced, is insured since there is no possibility of an accidental opening of the chamber 6 in which the film holder is housed due to the existence of a solenoid 30 which blocks, by means of its plate 33, the rotary latch 32, the access gate, therefore, being completely blocked.

The general collision of the different electric and electronic elements proportioned by the improvements of this invention are illustrated in figure 8 where there is a supply of source provided with an anti-parasitic filter 49, followed by the automatic circuit breakers 29 and the key switch 28. A varistor 50 is included, arranged in parallel, to abosrb minor fluctuations which could be produced in the electric voltage produced by other apparatus connected in the same line as the camera in question. A transformer 51, by means of its additional winding 52, proportions a voltage of 120V to the flash circuit 21 and the drag motor 16 of the film, the secondary of the transformer

51 produces a low alternating voltage which is rectified and filtered by the diode bridge 53 and which feeds the lamps 14, 23, 24, 25 and 26, as well as the solenoids 2, 9 and 30, said low rectified voltage being furthermore directed through a resistance, in series, and a condenser, in parallel, to the supply source of the logic circuit 20, from which the different connections controlling the various functions of the camera depart.

The circuits 20, 21 and 22 are housed in three printed circuit panels, the lamps, sensors, switches, motors, and other elements being housed in their corresponding and different sites of the photographic camera.

The logic circuit 20, whose structure can be seen in figure 9 of the accompanying set of drawings, is fed through a stabilized source 54, the main active elements whereof are comprised of a voltage regulator 55, at whose output a 12V stabilized direct current is obtained, and a stabilizing cell comprised of a resistance connected to a Zener diode which produces the referenced voltage for an integrated circuit 57 which includes four operational amplifiers which receive the signal from the opto-sensors 10, 15, 17 and 58, this integrated circuit 57 providing the alternate input signal for the other functions of the camera. Each one of the four comparator units thereof 57a, 57b, 57c and 57d, is provided with the necessary positive re-feed to achieve a substantial increase in hysteresis.

All the functions controlled by this logic circuit 20, such as the illumination of the lamps and the activation of the solenoids, are controlled by the transistors 60, 62, 64, 66 and 67 or driver transistor, as well as the darlington transistors 61, 63 and 65. The inputs to the logic circuit 20 consist of switch closures of variations in the signal levels of the opto-sensors.

When a data card is introduced in the camera, its presence is "felt" by the opto-sensors 10 and 11, the opto-sensor 10 should be interrupted by a black mark which should be printed on the corresponding edge of the card. This feature should be emphasized, since normal paper boards are partially transparent to the wavelength of the opto-sensors, a black print being sufficiently opaque to cause the comparator 57 to trigger. This device insures that the card has been correctly introduced in the camera. The potentiometer 68 determines the threshold of this sensitivity to insure the normal functioning and can be set for different types of prints or paper boards to be used.

A normal data card interrupts the two opto-sensors 10 and 11. However, a control card only interrupts the opto-sensor 10 since one corner thereof is cut. The sensor 11 functions with only two states, that of interruption or that of non-interruption, and the NAND gate 69 insures that the sensor 11 is interrogated only when the sensor 10 is interrupted.

When the drag motor 16 of the film functions therefore turning the axis 19 solidly fixed to the tachometric disc 48, it interrupts the optic circuit of the opto-sensor 17. This tachmometric disc 48 is so constructed that the angular distance between two teeth or marks thereof corresponds to the length of the photogram plus its separation zone. If, on initiating the photographic operation, due to transport or for any other reason, a tooth or mark of the tachometric disc 48 is not housed between the heads of the opto-sensor 17, a low logic state is present in the three-input NAND gate 70 and the motor 16 will immediately be operated, dragging the film until the next mark or tooth of the tachometric disc passes through the opto-sensor 17.

The lamps 23, 13, and 14 are the lights indicative of the "operative" position. When the lamp 23 is illuminated, it indicates that the cycle prior to the taking of a photograph has terminated correctly and that everything is in a position for a new photographic cycle and recording of data. The lamp 13 is connected parallel to the lamp 14 and to the solenoid 9. The diode 73 prevents the current from passing from the solenoid to the mentioned lamps.

The lamps 24, 25 and 26, in their activation state, are intermittent and indicate that something is not in operation line, requesting therefore the intervention of the operator of the camera. A stable multivibrator 71 is included as the impulse generator which functions constantly from the time the supply source is connected. The pulses produced thereby are sent to the driver transistors 60, 62, and 64 which illuminate said lamps through the NAND gates 72a, b, and c.

The gate 72b, and consequently lamp 26 are controlled by a flash monitor flip-flop 74 which, in turn, is controlled by the flip-flop 75 and is rearmed by a signal coming from the flash circuit 21 if the three flashes of the assembly trigger correctly. Rearming is completed by a resistance connected through each one of the flash condensers 76, 77 and 78. The currents obtained through these resistances are added in the emission sector of the opto-sensor 58. None of the three currents produced, on their own, is sufficient to saturate the output of the opto-sensor. Thus, an output pulse is only produced in the opto-sensor 58 when the three condensers 76, 77 and 78 have been discharged simultaneously. If one or more flashes have not been triggered for any reason, the flash monitor flip-flop 74 will prime the gate 72, permitting the oscillation coming from the stable multivibrator 71 to pass and producing the intermittent illumination of the lamp 26. This lamp will burn until the following exposure is produced, with the three flashes functioning correctly.

A timing circuit 79 is activated from the moment in which the motor 16 function, being rearmed through the NAND gate 80. Its characteristic period is of approximately 7 seconds. After this time, the circuit stops the motor 16 through the NAND gate 81. The purpose of this timing circuit is to prevent the motor 16 of the camera from functioning without

dragging the film, either because this has terminated or because it has broken. The initiation of the timing sequence takes place when the motor 16 starts to function. Under normal conditions, the motor is stopped by means of the three-input NAND gate 70 prior to the expiration of the 7 seconds, since said gate 70 is connected to the circuit of the opto-sensor 17, directly joined to the passage of the film. However, if the film is broken or it has terminated or even if the operator forgot it, the opto-sensor 17 will be stationary during the operative cycle. From this moment onwards the timing circuit 79 commences its function, passing a signal to the gate 72b which illuminates the lamp 26.

When the holder should be loaded or unloaded, a safety zone is required in the film either because the fogged portion should not be used or because the final exposed photograph should not be fogged when the holder is withdrawn from the chamber. This operation is carried out by making the film move forwards a predetermined space which is that of four photograms. Since the passage of these four photograms could require more than 7 seconds, the timer 82 is used to rearm the timing circuit 79, when each tooth of the tachometric disc 48 (photogram) passes. Thus, the period of 7 seconds always commences with the passage of the last photogram and, therefore, the timing of the passage of the first three photograms is cancelled.

A closure solenoid 30 insures that the gate of the compartment of the film is not opened while the camera functions. The cell formed by the resistance 38 and the condenser 84 maintains the current source continuous within the operational characteristics of the solenoid 30.

When a control card is inserted, the flip-flop 85 is activated, polarizing the base of the darlington transistor 65 which controls the solenoid 30, opening the latch 32 since the plate 33 is separated. In this way a positive pulse is incorporated by the flip-flop 86, commencing a new operative cycle. The purpose of this arrangement is to force the operator to use a control card to replace the film, preventing the withdrawal thereof when the machine is inoperative, a feature which would cause fogging of the final reproductions. Since the control card initiates the cycle automatically, the information contained thereon is photographed and is printed at the end of the strip of film as an identification thereof. The information contained on this control card, could consist of the date, location of reproduction, name of the firm to be photographed, etc. information which is likewise valid at the beginning of the film.

Therefore, the logic control forces the operator to use a control card to open the gate of the compartment of the holder, provided that the flip-flop 87 is inoperative, which flip-flop is activated by a gate pulse coming from flip-flop 86 controlled by the gate switch 31. When the flip-flop 87 is activated, it causes the light of the control card 24 to function, since it produces a high logic state at point D which prevents the trigger switch 13 from functioning. In this way the next photograph can only be taken by introducing a control card which will activate the flip-flop 87, causing lamp 24, which requests said card, to be switched off.

When the holder is withdrawn from the chamber, the final portion of the film which appears through the window 40 is fogged and the fog also reaches adjacent zones. To prevent the loss of any valid photograph, four photograms should move forward when the gate of the compartment of the film is opened or closed. A special profile in the latch 32 of the gate acts momentarily on the switch 31, producing a pulse which sets and resets the flip-flop 86. This flip-flop 86 activates the bi-stable 88 which controls the four-pitch counter 89, activating the motor 16 by means of the NAND gate 70. When a tooth of the tachometric disc 48, which is felt by the opto-sensor 17, passes, the counter 89 is increased in one pass. At the fourth pulse, the output of the counter 89 rearms the bi-stable 88 and stops the motor 16 which is supplied through its starting relay 90 which, in turn, is activated by the power transistor 91. Thus, there will always be four unexposed photograms, constituting a protecting characteristic for the other photographs already made.

The normal operative cycle of the camera starts by inserting a data card. This card interrupts the opto-sensor 10 and its output controls the data flip-flop 92. The output of this flip-flop 92 controls the focusing lamp 14, the lamp of the trigger switch 13, and the card fastening solenoid 9. One of the outputs of the flip-flop 92 activates the input of a new trigger flip-flop 93. When a data card is introduced correctly, the focussing lamp 14 as well as the lamp of the trigger switch 13 are illuminated, the solenoid 9 grasping the card and fixing it in its housing, the trigger flip-flop 93 requiring a high logic state in its connection to the flip-flop 75. By depressing the trigger 13, the output of the trigger flip-flop 93 drives the solenoid 2 through the investor 94 and the driver transistor 63. This output also proportions a low state to control the flash monitor flip-flop 74. When the solenoid 2 is completely open, the shutter 3 interrupts the opto-sensor 15 and the output of the comparator to the operational amplifier 57c is low, since it serves as a signal for the flash trigger, the inversor 95 and the transistor 67. This low state also controls the cycle rearm flip-flop 96 whose output control the data card flip-flop 92 and the operative flip-flop 93. At this moment, the focusing lamp 14 and that of the trigger 13 are switched off and the solenoid 9 is activated. The time in which the shutter remains open and during which the flashes are triggered is of approximately 20—30 milliseconds.

The output of the rearm flip-flop 96 also supplies through the gate 70, the driver transistor 91 and the motor 16 is controlled through the relay 90.

Once the motor has moved the film, so that the tachometric disc 48 interrupts the opto-sensor 17, the low state existing at the output of the gate 70 makes it advance until the next tooth of the tachometric disc 48 has passed through the opto-sensor 17. The resistance 97, the condenser 98 and the diode 99 permit the state of the gate 70 to be varied, producing a delay so that the motor 16 may have time to move the film to the following tooth of the tachometric disc, before the rearm flip-flop 96 is activated again.

The NOR gates 100 and 101 form a monostable multivibrator whose output pulse has a period of about 10 seconds. The average time of the interval is initiated by the operational flip-flop 93 when a photograph is taken. During the following 10 seconds, the data card flip-flop 92 is deactivated. Thus, it is insured that another photograph is not taken prior to the expiration of this time, permitting the complete charge of the flash condensers.

The resistance 102 and the filter condenser 103 form a constant voltage intake or initial voltage which insured that the flip-flops are always in their desired state when voltatge is supplied to the circuit.

The feeding scheme of the flashes, illustrated in figure 10 of the drawings, is comprised of a voltage multiplier to produce the charge of the flash condensers 76, 77 and 78, these condensers being isolated from one another by the diodes 104, 105 and 106, which insure that the charging and discharging processes of said condensers are completely independent from one another. The resistances 107, 108 and 109 supply current to the opto-sensor 110 to control the charging states of the condensers 76, 77 and 78 serving, furthermore, to drain the circuit when the unit is inoperative.

The voltage divider formed by the resistances 111, 112 and 113 supplies operative voltage to the trigger circuit, the opto-sensor 58 being the joining point between the flash circuit 21 and the logic circuit 20.

The cathode of each flash lamp is connected to the circuit through a resistance in series. This resistance should be set to achieve a correct colour balance, depending on the tolerances of the condensers 76, 77 and 78, on the state of the lamps, and the distance of the object, as well as on the difference in illumination between the data card and the object to be photographed.

Claims

1. Improvements introduced in systems for manufacturing identity cards, especially in those systems which consist in arranging a photographic camera in front of a retroreflecting screen, the individual being placed between same and the camera provided with means for simultaneously photographing the individual and his identification data, essentially characterised in that the dark chamber of the photographic camera is provided with a shutter activated by a toroidal solenoid which, in the maximum opening position, interrupts the luminous beam of an opto-sensor coupled to a control logic circuit of the photographic camera, whose means for dragging the film activate a toothed or perforated tachometric disc coupled to another opto-sensor, said tachometric disc being set with an angular speed proportional to the pitch of each photogram of the film; the door of the dark chamber being provided with a switch connected to the logic circuit and capable of activating the drag motor of the film for a period equivalent to that of the passage of a predetermined N number of photograms; said door furthermore being provided with a latch blocked by a solenoid controlled by the logic circuit, which is furthermore capable of controlling a flash feeding and triggering circuit provided with self-checking means for the trigger of each one of the flashes; said logic circuit is fed by two current stabilizers and the activation thereof depends on the states of the mentioned opto-sensors as well as another opto-sensor for detecting a control card, an opto-sensor for detecting the data card, and a third opto-sensor for controlling the flashes; and on the state of the door switch, of a trigger switch and a deactivating switch, the signal sent by the opto-sensors, with the exception of that corresponding to the data card, to the operational amplifier being controlled by respective comparators, said logic circuit including a monostable multivibrator acting as delay circuit between triggers of the photographic camera, a stable multivibrator acting as the generator of an intermittent signal for a plurality of reference lamps, a timing circuit acting as the limiter of the activation time of the motor of the camera, a counting circuit of the passage of the predetermined N number of photograms, and a power transistor composed of driver or darlington transistors for the activation of the various reference lamps and solenoids of the system.

2. Improvements introduced in systems for manufacturing identity cards according to claim 1, characterised in that the stable multivibrator permanently sends its output signal to a series of two-input NAND gates, the output of each one of which is connected to the base circuit of its respective driver transistor, to the collector of which is connected the corresponding reference lamp; and in that the passage of the signal from the stable multivibrator through said NAND gates depend on the logic state of its remaining input.

3. Improvements introduced in systems for manufacturing identity cards according to the preceding claims, characterised in that the flash circuit is activated by the opto-sensor of the shutter whose emitted signal passes through an inversor and activates a transistor provided in the control logic circuit, the emitter thereof receiving the order of activation from the flash circuit, said logic circuit being provided with a flip-flop for rearming the assembly and a flash monitor flip-flop, both controlled by the signal generated by the opto-sensor of the shutter.

4. Improvements introduced in systems for

manufacturing identity cards according to the preceding claims, characterised in that the flash circuit incorporates a voltage multiplier for charging a series of condensers isolated from one another by means of diodes, an opto-electronic element being provided as the means for controlling the charging of said condensers; an opto-sensor joined to the flash monitor flip-flop, prior to the interposition of its corresponding comparator and followed by an inversor element, is provided as the coupling element between the flash circuit and the control circuit.

5. Improvements introduced in systems for manufacturing identity cards according to the preceding claims, characterised in that the drag motor of the film is activated by the signal coming from the photosensor coupled to the tachometric disc in a time equivalent to the passage of a photogram; and in that both at the begining and the end of the film the tachometric disc sends its signal to the N-photogram counting circuit with the consequent functioning of the motor, same being dependent on the action of the limiting circuit.

6. Improvements introduced in systems for manufacturing identity cards substantially as herein described with reference to the accompanying drawings.

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